**Action Research: Implementation and Assessment for Restoration-Based Environmental Education**

UW-Madison Arboretum

Dept of Curriculum and Instruction

Spring/Summer 2012

**Reflective Journal Worksheet & Assignments**

**Your Name: Cindy Murray**

**Due by January 30 by 9 a.m.**

What are you interested in researching? Is there an issue you want to address in your classroom or school? What are your assumptions and expectations about your issues? What do you already know about the topic? What are some of your concerns about doing an action research project?

***What are you interested in researching?***

*I am interested in researching attitudes, opinions, a general knowledge about any aspect of environmental science. Really it’s the process of how to go about performing action research that interests me the most. I would like to do some type of collaborative project if possible- to compare rural to urban or some other group. I would also like to involve web 2 tools to carry out the data collection.*

***Is there an issue you want to address in your classroom or school?***

*There are several that would be action research worthy. We recently started a restoration project, but the time frame may not fit that of this course. I have already performed a few student interest surveys, and could expand upon this initial effort.*

*Outdoor learning areas have been established, but are not currently used by other classes. Developing an educational nature trail would be cool. Measuring attitudes and opinions toward this type of project would help in the grant writing process.*

*I am also working with Pat Lupo on planning the summer 2012 Earth Partnership meeting at the Tom Ridge Center in Erie, PA. She has several projects in mind that could involve my classes.*

*Pat & I are also working together on a pharmaceutical take back program to help prevent unused medications entering Lake Erie via the wastewater system. Any of the “spread the word” project would fit this course’s objectives.*

*We plan to conduct an energy audit this spring, so that is also an option.*

*Another option may be centered around a scheduled guest speaker (Mike Mann from Penn State University) who is visiting (May 21st) our school to discuss Climate Change. A baseline impact survey would be interesting.*

***What are your assumptions and expectations about your issues?***

*I would like to be able to measure affective goals and objectives including attitudes and opinions. Being of a science mindset it is easy to collect quantitative “hard” data that is measured by instruments, but it gets a little grey when it comes to “soft” opinion data.*

*I would hope that whatever issue is chosen that the end “post” survey or evaluation shows a positive impact or change.*

***What do you already know about the topic?***

*I am already actively involve in the above-mentioned issues, and but have a limited idea of where others stand on the issues.*

***What are some of your concerns about doing an action research project?***

*My greatest concern is being able to write the surveys so that they show measureable results. I think that I may also struggle a little with over complicating the project – tips on narrowing down the issue and developing focus will need to occur early on.*

Instructor Response:

You have a lot of great ideas and opportunities. And you are right, it will be important to narrow down your topic. The outdoor learning areas option might be a good research project to focus on in order to lead to next steps. You could survey or interview students, teachers, and staff members. Just an idea. Go with the topic that interests you the most.

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**Due February 13 by 9 a.m.**

Describe what you would like to research or explore for your action research project. What are you curious about? What issue do you want to address?

I would like to address the issue of biodiversity, especially biodiversity that ensures the use of restoration and native plantings. To do this cognitive plant identification skills would need to be developed. I think that plant familiarity would best be taught through hands-on learning and authentic experiences with actual plants. I am curious as to how to go about measuring prior knowledge, creating a learning opportunity, and measuring outcomes such as student motivation and cognitive achievements. I am also interested in the emotional gains that may occur throughout a community-based project.

So my issue may be:

What are the emotional and cognitive gains for high school youth during a rain garden installation project?

Instructor Response:

Very Nice! We love the idea of focusing on plant families to enhance emotional and cognitive learning. Are familiar with the concept of Plant Blindness? There are some interesting articles on line that you might want to look at.

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**Due February 27 by 9 a.m.**

**What is your Problem Statement ?**

What are the emotional and cognitive gains for high school youth during a rain garden installation project?

Can the building of a rain garden decrease plant blindness in rural high school students?

**Who is affected?**

Northwestern High School students in grades 11 & 12.

**Who or what is suspected of causing the problem?**

Poor science literacy and learned observation skills. Societies lack of enthusiasm for plants, along with an under emphasis in science courses- main focus usually on animals. Lack of knowledge / learned experience or training to systematically make observations about an ecosystem.

**What kind of problem is it?**

Taught / Learned problem- research supported.

**What is the goal for improvement?**

Improved plant recognition and appreciation. Perhaps increased conservation efforts.

**What do you propose to do about it?**

Provide opportunities for students to learn observation skills- seeing the environment as a whole with interactions. By designing and building an educational area, students will be “forced” to “see the plants.” Opportunities to “train the brain” to notice similarities and differences will be extended through art work.

Instructor Response:

Great job! We look forward to learning more about this will work!

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**Due by March 12 by 9 a.m.**

List at least 3 (or more) peer reviewed journal articles on topics related to the problem that you have found (use APA format; see APA Formatting and Style Guide at <http://owl.english.purdue.edu/owl/resource/560/01/>).

I am still researching my topic, but listed below area few articles that interested me.

**Articles:**

Braun, M., Buyer, R., & Randler, C. (2010). Cognitive and emotional evaluation of two educational outdoor programs dealing with non-native bird species. International Journal of Environmental & Science Education, 5, 151-168.

Fancovicova, J. & Prokop, P. (2011). *Plants have a chance: Outdoor educational programmes alter students' knowledge and attitudes towards plants. Environmental Education Research*, 1*7*(4), 537-551.

Malone, K. (2005). “Hanging out in the Schoolground”: A Reflective Look at Researching Children’s Environmental Learning. Canadian Journal of Environmental Education, 10 Spring, 212-224.

Randler, C. (2005). Cognitive and Emotional Evaluation of an Amphibian Conservation Program for Elementary School Students. *The Journal for Environmental Education*, 37, 43-52.

Randler, C. & Bogner, F. (2006). Cognitive Achievements in Identification Skills. *Journal of Biological Education*, 40, 161-165.

**What do you find to be helpful or useful from the articles you found?**

That there have been many studies performed to using measurement tools for examining cognitive gains, and that this is not as new of a topic as I thought. The problem has been developing over the last two decades, as indicated by some of the other articles I came across.

**What’s interesting?**

Much of what I finding is very interesting, but most of all the connections to place-based learning and learning through experiences, rather than from textbooks. Another interesting area is that the problem of plant blindness seems to be one that is created by society, rather than some innate “illness.” A solution may simply be to create awareness of one’s world around them.

**Key word searches:** plant blindness, measuring cognitive gains, baseline surveys, experiential education, project-based gains, pattern recognition, benefits of environmental learning centers, outdoor education.

Instructor Response:

Nice Job! Here’s a link to one of the original plant blindness articles in American Biology Teacher: <http://www.jstor.org/stable/4450624>; the reference section has some other articles that you might find useful.

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**Due by March 26 by 9 a.m.**

Write a draft introductory paragraph that includes where the research is taking place, who and/or what is being researched, and what concern or problem is being addressed

A recent trip to Costa Rica shifted my attention to the vast biodiversity of the plant kingdom.

Fill out your Data Collection Plan. Include at least 3 data sources.

|  |  |  |
| --- | --- | --- |
| **Research Question** | **Instrument** | **Type of Strategy**  **(Artifacts, Observational Data, or Inquiry Data)** |
| What are the emotional and cognitive gains for high school youth during a rain garden installation project? | Student Pre & Post Survey | Survey- Feedback / Inquiry Data |
| Student journals- free response | Artifacts |
| Student interviews- informal and formal | Artifacts |
| Teacher Observation / class notes & tracking sheets | Observational Data |

Instructor Response:

Great Job! Any ideas of themes you think you want to look for in the journals or observations?

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**All data collection instruments are due by April 12**

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**Due by April 16 by 9 a.m.**

What are some challenges that are emerging about the data collection instruments or process, or overall project? Any ideas about how to address those challenges?

I seemed to encounter a bit more challenges than I originally thought. Limiting questions and trying to narrow down the pre survey efforts was very difficult for me. I’m struggling with gaining a global view of my whole project (with the time period in mind) and projecting future issues that may arise. I think that I’m back on track, but am not quite there on the survey questions.

Some challenges for data collection in general are

* finding a suitable target audience
* writing prompts and questions so that the surveyed individuals can understand what is being asked and see value in the survey
* creating collection instruments that are not leading & bias-free
* gaining a large enough sample size
* limiting questions to a sufficient number

These issues can be addressed through peer review and advice from others who are familiar with writing survey questions.

Utilizing existing/established collection tools

I will need to gain permission from Elisabeth Schussler to use a collection tool suggested through an email correspondence . This survey offers insight on different categories of attitude and opinion that I find very interesting. I’ll send an email shortly to request use of this survey for action research in my classroom.

Timely Data Collection

Administering the surveys electronically through a web-based survey site- (I will use Quia) will allow for quick collection and analysis.

Tracking sheets / journal prompts

I still need to develop attitude observational check sheets for classroom observation. These will become part of documenting the emotional / motivational gains.

Content / Academic gains

The test for cognitive gains will need to be differentiated because there are a diverse group of learners in the population to be surveyed.

Instructor Response:

You are right on track with your dilemmas. Maybe you will get some ideas from Matt in tonight’s class or in your small group.

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**Due by April 30 by 9 a.m.**

**What other potential action research projects/questions are emerging?**

Are there gender or geographical location differences?

**What are some other questions that are coming up for you based on your research?**

If plant blindness can be corrected, is there a target age when this needs to occur? Do crystallizing motions in one’s childhood impact plant blindness?

**What would you want to research next?**

Compare different grade levels.

**What are some of your next action steps at your school?**

Complete the Restoration Project in front of the school; seek additional funding to make this happen.

Instructor Response:

Interesting questions that are emerging! It will be interesting to see how your students’ connection with plants shift (if at all) with their engagement to the restoration project. Thanks for investigating this topic.

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**Due May 14 by 9 a.m.**

**How has this practice befitted your teaching?**

This practice has added purpose to my teaching. The use of a pre-survey has helped me to identify / validate issues or concerns rather than just assuming that the issue / problem exists because it has been documented. For teachers it is important to be effective and to apply methods specific to our own unique circumstances.

The use of the critical friends review sessions allowed me to practice peer review. The process instilled collaboration and respect. I would like to see this method incorporated more into project within my school.

**Describe what went well, what went poorly, or what was a surprise to you during the action research process, separate from the topic.**

The activities were easily incorporated into the existing curriculum and I was able to align them to the state standards. The students seemed to enjoy the earth partnership activities. I did struggle with the timing of incorporating the study into the classroom. State standardized testing, weather, student symposiums, and workshops made it difficult to meet the timeframe. I was surprised by the benefit of the support gained during the small group sessions. I was also surprised by the success of the projects through the incorporation of action research into a variety teaching areas; all of the presented projects demonstrated measurable results. This really validates what we do in our classroom.

**Have you encountered any personal changes, insights, inconsistencies in practice, struggles, or new ideas for future research during this experience?**

Yes, I have seen changes in my teaching practices. I am more inclined to do preassessments and presurveys to measure changes / improvements. I feel more comfortable discussing and asking the opinion of my peers after working within my small group discussions. Personally, related to my topic I am more aware of including plants / botany within my science curriculum.

**What would you do differently?**

I’m not sure if I would do anything differently; perhaps I would have taken the course in the summer to complete the action plan in the fall- Spring especially April and May are very busy due to science competitions, symposiums, and standardized testing.

**What would you do the same?**

Utilize the critical friends; these small group sessions were the most beneficial.

Instructor Response:

Sounds like you learned a lot! We hope you can find colleagues to form a critical friends group. Here’s additional protocols to use if you do: <http://www.nsrfharmony.org/protocols.html>. Good luck!

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**Assignment: Class Presentations due on May 14 & May 21**

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**Assignment: Final Reports due & Draft Presentations for EPS Institutes due by May 23**

Use APA format. See APA Formatting and Style Guide at http://owl.english.purdue.edu/owl/resource/560/01/

Use the Action Research Rubric for guidelines on the report content

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